Section XXVIII
Childhood Cancer by the International Classification of Childhood Cancer (ICCC)
Incidence and Survival

The International Classification of Childhood Cancer (ICCC) was used to group histologic types and sites into meaningful categories. This classification was published by IARC (1). Since childhood cancer is rare in comparison to adult cancers, the rates presented in this section are per million children instead of per 100,000. The data presented are for invasive (malignant) tumors only.

- While the overall rate for all childhood (under age 15 years) cancers combined has increased about 0.7 percent per year between 1973 and 1997, the incidence has been flat (EAPC of 0.0 percent per year), i.e., the rates have not changed, during the more recent part of the time period, between 1985 to 1997. The joinpoint analyses for all sites combined for ages under 20 years in the first figure shows an estimated increasing trend in contrast to a flat trend when a straight line is fit to 1985 to 1997. The joinpoint analysis will not choose joinpoints when the rates are variable. In contrast, the trend in incidence for brain cancer shows several joinpoints. A discussion of joinpoint analysis is contained in the overview.
- The incidence rates varied by ICCC group and age group. The highest incidence rates were leukemia for <5 and 5-9 year olds, CNS for children under 5 years of age, and lymphomas for 15-19 year olds.
- Changes in histologic diagnosis and changes to reporting requirements over time can affect the trends by specific histologic type. For example, primitive neuroectodermal tumor (PNET) is a relatively new diagnosis and showed an increase of 2.8 percent per year between 1985 and 1997 with a corresponding decrease (-2.4 percent per year) in another CNS category, namely other gliomas. The overall CNS category showed little change, -0.4 percent per year between 1985 and 1997.
- It should be kept in mind that the estimated annual percent change (EAPC) and the percent change are relative percentages. In some cases, especially rare tumors, small absolute changes in the rates can translate to large changes in relative percentages. For example, hepatoblastoma increased 112 percent (probably due to more specificity as to the type of hepatic tumor over time) while the actual rate changed by less than 1 child per million children between 1973 and 1997.
- More detailed information by the ICCC groupings has been published in the monograph, *Cancer Incidence and Survival among Children and Adolescents: United States SEER Program, 1975-1995.* The monograph contains information on cancer incidence, survival, risk factors and mortality. The monograph is available for viewing or ordering a printed copy from the 'Publications section' of the SEER Web page:
  http://www.seer.cancer.gov

1) Kramarova E, Stiller CA. The international classification of childhood cancer. Int. J. Cancer: 68, 96:759-765. This classification was used with a slight modification: PNET cases outside of the brain/CNS were moved from III c to Ewing's sarcoma if bone and to soft tissue sarcoma otherwise.

Table XXVIII-1

AGE-ADJUSTED AND AGE-SPECIFIC SEER CANCER INCIDENCE RATES, 1973-97§

By International Classification of Childhood Cancer(ICCC) Group and Subgroup and Age

All Races, Males and Females

ICCC Group and Subgroup	0-14	0-19	0-4	5-9	10-14	15-19
All Groups Combined	134.8	149.6	191.4	105.9	115.7	194.6
I Leukemia	40.5	36.1	67.5	34.5	23.9	22.8
I(a) Lymphoid leukemia	31.3	26.4	54.3	27.7	15.7	11.7
Acute lymphoblastic leukemia (ALL)	31.0	26.1	53.8	27.4	15.6	11.4
Lymphoid excluding ALL	0.3	0.3	0.5	0.3	0.2	0.3
I(b) Acute non-lymphocytic leukemia	6.1	6.5	8.4	4.5	5.9	7.6
Acute myeloid leukemia (AML)	4.5	4.9	5.5	3.7	4.4	6.2
Acute non-lymphocytic excluding AML	1.7	1.6	2.9	0.8	1.5	1.5
I(c) Chronic myeloid leukemia	0.9	1.2	1.0	0.6	1.0	2.1
I(d) Other specified leukemias	0.3	0.3	0.4	0.1	0.2	0.3
I(e) Unspecified leukemias	1.9	1.7	3.5	1.5	1.0	1.1
II Lymphomas and reticuloendothelial neo.	15.3	24.1	7.2	13.0	24.3	50.6
II(a) Hodgkin's disease	6.4	13.8	0.7	4.2	13.3	36.2
II(b) Non-Hodgkin's lymphomas	5.4	6.9	3.6	5.2	7.0	11.5
II(c) Burkitt's lymphoma	2.1	1.9	1.6	2.4	2.3	1.2
II(d) Miscellaneous lymphoreticular neo.	0.4	0.4	0.7	0.3	0.4	0.3
II(e) Unspecified lymphomas	1.0	1.1	0.6	0.9	1.2	1.5
III CNS and misc intracranial and intraspinal neo.	28.2	25.9	31.9	29.5	23.8	19.1
III(a) Ependymoma	2.6	2.1	5.1	1.4	1.5	0.9
III(b) Astrocytoma	13.9	13.4	12.7	14.9	13.8	12.0
III(c) Primitive neuroectodermal tumors	6.1	5.0	8.1	6.7	3.8	1.9
III(d) Other gliomas	4.8	4.4	4.8	5.6	4.0	3.3
III(e) Misc intracranial and intraspinal neo.	0.3	0.4	0.4	0.4	0.3	0.5
III(f) Unspecified intracranial and intraspinal neo.	0.6	0.6	0.9	0.6	0.4	0.5
IV Sympathetic nervous system tumors	10.1	7.9	29.0	3.2	1.1	1.1
IV(a) Neuroblastoma and ganglioneuroblastoma	9.8	7.6	28.5	3.1	0.8	0.8
IV(b) Other sympathetic nervous system tumors	0.3	0.3	0.5	0.1	0.3	0.3
V Retinoblastoma	3.7	2.8	11.8	0.6	0.1	0.0
VI Renal tumors	8.1	6.4	18.8	6.0	1.3	1.2
VI(a) Wilms' tumor, rhabdoid and clear cell sarc.	7.8	6.0	18.6	5.8	0.9	0.4
VI(b) Renal carcinoma	0.2	0.4	0.1	0.1	0.4	0.8
VI(c) Unspecified malignant renal tumors	0.0	0.0	0.0	0.0	0.0	0.0

§ SEER Program. Rates are per 1,000,000 and are age-adjusted to the 1970 U.S. standard.
\- Statistic could not be calculated.
Neoplasms are abbreviated as neo. Sarcomas are abbreviated as sarc.

Table XXVIII-1(cont'd)

AGE-ADJUSTED AND AGE-SPECIFIC SEER CANCER INCIDENCE RATES, 1973-97§

By International Classification of Childhood Cancer(ICCC) Group and Subgroup and Age

All Races, Males and Females

ICCC Group and Subgroup	0-14	0-19	0-4	5-9	10-14	15-19
VII Hepatic tumors	1.7	1.5	4.3	0.6	0.7	0.8
VII(a) Hepatoblastoma	1.3	1.0	4.0	0.2	0.1	0.1
VII(b) Hepatic carcinoma	0.4	0.5	0.2	0.4	0.6	0.7
VII(c) Unspecified malignant hepatic tumors	0.0	0.0	0.0	0.0	0.0	0.0
VIII Malignant bone tumors	6.7	8.7	1.1	4.9	13.2	14.8
VIII(a) Osteosarcoma	3.6	4.8	0.4	2.4	7.5	8.2
VIII(b) Chondrosarcoma	0.3	0.5	0.0	0.1	0.7	1.3
VIII(c) Ewing's sarcoma	2.5	3.1	0.5	2.2	4.4	4.7
VIII(d) Other specified malignant bone tumors	0.2	0.3	0.0	0.1	0.4	0.5
VIII(e) Unspecified malignant bone tumors	0.1	0.1	0.1	0.1	0.1	0.1
IX Soft-tissue sarcomas	9.5	10.8	10.3	8.4	10.1	14.8
IX(a) Rhabdomyosarcoma and embryonal sarcoma	4.7	4.4	6.6	4.8	3.0	3.6
IX(b) Fibrosarc., neurofibrosarc. and oth fibromatous neo.	2.2	3.0	1.8	1.5	3.3	5.3
IX(c) Kaposi's sarcoma	0.0	0.1	0.0	0.0	0.0	0.2
IX(d) Other specified soft-tissue sarcomas	1.7	2.2	1.2	1.3	2.4	3.9
IX(e) Unspecified soft-tissue sarcomas	0.9	1.1	0.7	0.7	1.3	1.8
X Germ-cell, trophoblastic and other gonadal neo.	4.6	10.1	6.1	2.0	6.0	26.9
X(a) Intracranial and intraspinal germ-cell tumors	1.0	1.2	0.4	0.9	1.6	1.8
X(b) Other and unspecified non-gonadal germ-cell tumors	1.2	1.6	3.4	0.1	0.6	2.7
X(c) Gonadal germ-cell tumors	2.1	6.1	2.2	0.9	3.2	18.3
X(d) Gonadal carcinomas	0.2	1.0	0.0	0.0	0.5	3.4
X(e) Other and unspecified malignant gonadal tumors	0.1	0.2	0.1	0.1	0.1	0.7
XI Carcinomas and other malignant epithelial neo.	5.3	14.1	1.7	2.8	10.6	40.9
XI(a) Adrenocortical carcinoma	0.2	0.2	0.4	0.2	0.1	0.2
XI(b) Thyroid carcinoma	1.8	5.0	0.1	0.9	4.1	14.5
XI(c) Nasopharyngeal carcinoma	0.3	0.6	0.1	0.1	0.6	1.5
XI(d) Malignant melanoma	1.4	4.4	0.6	0.9	2.6	13.6
XI(e) Skin carcinoma	0.0	0.0	0.0	0.0	0.0	0.1
XI(f) Other and unspecified carcinomas	1.5	3.9	0.4	0.8	3.2	10.9
XII Other and unspecified malignant neo.	0.6	0.8	0.8	0.3	0.7	1.6
XII(a) Other specified malignant tumors	0.1	0.3	0.1	0.1	0.2	0.6
XII(b) Other unspecified malignant tumors	0.5	0.6	0.7	0.2	0.5	1.0
Not classified by ICCC	0.3	0.3	0.9	0.1	0.1	0.1

§ SEER Program. Rates are per 1,000,000 and are age-adjusted to the 1970 U.S. standard.
\- Statistic could not be calculated.
Neoplasms are abbreviated as neo. Sarcomas are abbreviated as sarc.

Table XXVIII-2

AGE-ADJUSTED SEER CANCER INCIDENCE RATES, 1973-78, 1979-84, 1985-90, 1991-97§

By International Classification of Childhood Cancer(ICCC) Selected Group and Subgroup and Year of Diagnosis

All Races, Males and Females, Ages 0-19

ICCC Group and Subgroup	1973-78	1979-84	1985-90	1991-97
All Groups Combined	138.3	144.4	156.1	157.9
I Leukemia	34.9	34.8	37.5	37.0
I(a) Lymphoid leukemia	23.7	25.9	28.3	27.5
Acute lymphoblastic leukemia (ALL)	23.1	25.6	28.2	27.1
I(b) Acute non-lymphocytic leukemia	6.3	6.1	6.3	7.2
Acute myeloid leumemia (AML)	5.4	4.7	4.1	5.3
II Lymphomas and reticuloendothelial neo.	23.5	24.6	24.6	23.9
II(a) Hodgkin's disease	14.0	14.4	14.1	12.9
II(b,c,e) Non-Hodgkin's lymphomas	8.9	9.7	10.2	10.8
III CNS and misc intracranial and intraspinal neo.	22.6	22.5	29.1	28.6
III(a) Ependymoma	2.0	1.5	2.6	2.4
III(b) Astrocytoma	11.1	11.9	15.6	14.5
III(c) Primitive neuroectodermal tumors	4.8	4.1	5.1	6.0
III(d) Other gliomas	3.8	4.2	4.7	5.0
IV Sympathetic nervous system tumors	7.5	7.9	7.8	8.2
IV(a) Neuroblastoma and ganglioneuroblastoma	7.4	7.5	7.4	7.8
V Retinoblastoma	2.4	2.8	2.9	3.0
VI Renal tumors	5.8	6.5	6.4	6.7
VI(a) Wilms' tumor, rhabdoid and clear cell sarcoma	5.4	6.3	6.0	6.2
VII Hepatic tumors	1.3	1.3	1.4	1.8
VII(a) Hepatoblastoma	0.7	0.9	1.0	1.2
VIII Malignant bone tumors	7.5	9.0	9.0	9.4
VIII(a) Osteosarcoma	3.9	4.7	5.2	5.2
VIII(c) Ewing's sarcoma	2.5	3.6	3.0	3.1
IX Soft-tissue sarcomas	10.0	10.6	11.6	11.1
IX(a) Rhabdomyosarcoma and embryonal sarcoma	4.1	4.0	4.9	4.6
X Germ-cell, trophoblastic and other gonadal neo.	8.3	9.7	10.1	12.3
X(a) Intracranial and intraspinal germ-cell tumors	0.5	1.1	1.1	2.0
X(c) Gonadal germ-cell tumors	5.4	6.1	6.2	6.8
XI Carcinomas and other malignant epithelial neo.	13.3	13.5	14.6	14.9
XI(b) Thyroid carcinoma	4.8	4.7	5.3	5.1
XI(d) Malignant melanoma	3.6	4.0	5.3	4.9

§ SEER Program. Rates are per 1,000,000 and are age-adjusted to the 1970 U.S. standard.
- Statistic could not be calculated.
Neoplasms are abbreviated as neo.

Table XXVIII-3

AGE-ADJUSTED SEER CANCER INCIDENCE TRENDS, 1973-97, 1973-84, 1985-97§

By International Classification of Childhood Cancer(ICCC) Selected Group and Subgroup

All Races, Males and Females

	Ages 0-14				Ages 0-19			
ICCC Group and Subgroup	% Change 1973-97	EAPC 73-97	EAPC 73-84	EAPC 85-97	% Change 1973-97	EAPC 73-97	EAPC 73-84	EAPC 85-97
All Groups Combined	10.0	0.7★	0.5	0.0	12.9	0.7★	0.8★	0.0♦
I Leukemia	0.0	0.4	0.0	-0.4	-2.9	0.4	0.1	-0.2
I(a) Lymphoid leukemia	24.8	1.0★	1.9	0.0◇	20.9	1.0★	2.2★	-0.1♦
Acute lymphoblastic leukemia (ALL)	24.4	1.0★	2.1	-0.1◇	20.7	1.0★	2.3★	-0.2♦
I(b) Acute non-lymphocytic leukemia	-9.2	0.2	-2.0	-0.1	-8.3	0.4	-2.1	0.8
Acute myeloid leumemia (AML)	-22.7	-0.9	-5.4★	2.2♦	-20.2	-0.6	-4.7★	2.7♦
II Lymphomas and reticuloendothelial neo.	-10.3	-0.6★	-0.5	-1.2	12.2	0.1	1.3	-0.6♦
II(a) Hodgkin's disease	-10.8	-1.3★	-1.6	-1.9	6.9	-0.4	0.8	-1.2
II(b,c,e) Non-Hodgkin's lymphomas	0.3	0.2	1.0	-0.2	30.0	1.1★	2.3★	0.5◇
III CNS & misc intracranial & intraspinal neo.	23.0	1.6★	0.3	-0.4	26.2	1.5★	0.4	-0.4
III(a) Ependymoma	32.8	1.8★	-2.8	-0.8	40.6	1.8★	-2.8	-0.6
III(b) Astrocytoma	50.8	2.1★	2.4	-0.6◇	49.4	1.8★	2.3	-0.9◇
III(c) Primitive neuroectodermal tum.	18.1	1.6★	-1.9	2.8★◇	10.9	1.7★	-1.7	2.4★
III(d) Other gliomas	-12.6	0.8	1.4	-2.4	12.7	1.2★	1.3	-0.9
IV Sympathetic nervous system tum.	18.7	0.5	1.4	0.5	15.0	0.4	1.2	0.3
IV(a) Neuroblastoma and ganglioneuroblastoma	15.4	0.4	0.8	0.7	13.3	0.3	0.7	0.5
V Retinoblastoma	6.8	0.7	0.5	-0.3	6.8	0.7	0.5	-0.3
VI Renal tum.	25.7	0.6	1.9	0.2	23.8	0.6	1.9	0.3
VI(a) Wilms' tum., rhabdoid & clear cell sarcoma	26.2	0.6	2.1	0.3	24.1	0.6	2.2	0.3
VII Hepatic tum.	19.6	1.8	1.3	2.4	31.2	2.1	2.3	1.6
VII(a) Hepatoblastoma	112.0	4.5★	5.5	3.2	91.9	4.3★	5.0	3.0
VIII Malignant bone tum.	2.7	0.6	1.8	-0.6	12.9	0.9★	2.0	0.0
VIII(a) Osteosarcoma	-1.4	1.2★	1.6	0.1	10.0	1.3★	1.9	0.1
VIII(c) Ewing's sarcoma	-1.6	-0.2	4.4	-1.6	15.4	0.4	4.5	-0.8
IX Soft-tissue sarcomas	21.7	0.9	0.6	0.6	19.8	0.7	1.2	-0.2
IX(a) Rhabdomyosarcoma and embryonal sarcoma	28.7	1.2	0.5	0.7	13.6	0.9	0.1	0.4
X Germ-cell, trophoblastic & other gonadal neo.	58.9	1.9★	2.7	5.5★	40.7	1.9★	2.0★	2.3
X(a) Intracranial and intraspinal germ-cell tum	575.1	-	-	-	792.1	7.8★	12.3	8.0★
X(c) Gonadal germ-cell tum.	-14.6	-1.0	-1.3	-0.6	17.4	1.2★	2.1	0.7
XI Carcinomas and other malignant epithelial neo.	3.6	0.3	-0.9	0.4	8.4	0.6	0.2	0.2
XI(b) Thyroid carcinoma	-12.5	-0.3	-1.2	-1.2	0.3	0.4	0.8	-0.8
XI(d) Malignant melanoma	77.6	2.1	0.2	-1.8	67.1	1.8★	0.2	-1.0

The EAPC is the Estimated Annual Percent Change over the time interval.
§ SEER Program.
★ The EAPC is significantly different from zero (p<.05).
♦ The EAPC for 1985-97 is significantly different from the EAPC for 1973-84 (p<.05).
◇ The EAPC for 1985-97 is significantly different from the EAPC for 1973-84 (p<.10).
- Statistic could not be calculated.
Neoplasms are abbreviated as neo. Tumors are abbreviated as tum.

Table XXVIII-4

AGE-ADJUSTED SEER CANCER INCIDENCE TRENDS, 1973-97, 1973-84, 1985-97§

By International Classification of Childhood Cancer(ICCC) Selected Group and Subgroup

All Races, Males

	Ages 0-14				Ages 0-19			
ICCC Group and Subgroup	% Change 1973-97	EAPC 73-97	EAPC 73-84	EAPC 85-97	% Change 1973-97	EAPC 73-97	EAPC 73-84	EAPC 85-97
All Groups Combined	7.3	0.7★	0.0	0.0	11.9	0.8★	0.6	0.1
I Leukemia	-2.6	0.4	-1.1	-0.5	-5.8	0.2	-1.0	-0.5
I(a) Lymphoid leukemia	15.2	0.9★	0.5	-0.2	12.4	0.8★	1.1	-0.3
Acute lymphoblastic leukemia (ALL)	14.9	0.9★	0.7	-0.3	12.4	0.9★	1.3	-0.5
I(b) Acute non-lymphocytic leukemia	17.0	0.6	-2.5	0.2	4.5	0.3	-3.9★	1.2♦
Acute myeloid leumemia (AML)	3.6	-0.5	-7.3★	3.4♦	-9.6	-0.7	-7.7★	3.5♦
II Lymphomas and reticuloendothelial neo.	-12.1	-0.6	1.5	-1.4♦	6.5	0.0	1.9★	-0.5♦
II(a) Hodgkin's disease	-18.3	-1.4	-0.8	-4.3★	-1.4	-0.8	1.1	-2.5★◇
II(b,c,e) Non-Hodgkin's lymphomas	-2.2	0.2	2.7	0.6	20.2	0.9★	2.7★	1.3
III CNS & misc intracranial & intraspinal neo.	24.4	1.8★	0.4	-0.3	26.8	1.7★	0.7	-0.3
III(a) Ependymoma	46.2	2.6★	-1.7	0.0	43.8	2.6★	-1.8	-0.3
III(b) Astrocytoma	70.3	2.4★	3.1	0.0	69.2	2.0★	3.7★	-0.8♦
III(c) Primitive neuroectodermal tum.	-2.9	1.8	-1.9	2.7	-12.1	1.7	-2.0	2.3
III(d) Other gliomas	-9.6	1.5	0.8	-2.8	13.7	1.9★	0.3	-0.8
IV Sympathetic nervous system tum.	2.9	0.4	-0.3	1.5	-0.5	0.5	-0.7	1.0
IV(a) Neuroblastoma and ganglioneuroblastoma	1.3	0.3	-1.2	2.0	-2.1	0.3	-1.4	1.4
V Retinoblastoma	-43.6	0.2	-0.5	-1.9	-43.6	0.3	-0.5	-2.0
VI Renal tum.	43.1	1.5★	2.8	0.4	49.2	1.4★	2.7	0.8
VI(a) Wilms' tum., rhabdoid & clear cell sarcoma	39.8	1.5★	3.2	0.6	39.8	1.5★	3.6	0.7
VII Hepatic tum.	15.1	2.3	-1.6	4.7	25.9	2.5	-2.7	5.2
VII(a) Hepatoblastoma	76.3	3.5★	1.2	7.4	76.3	3.3★	0.5	7.0
VIII Malignant bone tum.	12.6	0.7	0.3	1.0	24.1	1.4★	1.9	1.5
VIII(a) Osteosarcoma	6.4	1.4	1.4	-0.5	23.7	2.1★	3.1	0.5
VIII(c) Ewing's sarcoma	-5.3	0.3	1.4	2.3	19.9	0.2	2.3	2.3
IX Soft-tissue sarcomas	24.4	1.0	-0.3	0.0	21.7	0.9	-0.2	-0.5
IX(a) Rhabdomyosarcoma and embryonal sarcoma	25.7	1.5	-0.3	-0.5	3.0	1.0	-1.3	-1.1
X Germ-cell, trophoblastic & other gonadal neo.	113.7	1.9	0.2	8.3	75.3	2.2★	4.6★	3.0
X(a) Intracranial and intraspinal germ-cell tum	696.3	-	-	-	1015.2	7.9★	6.4	7.8★
X(c) Gonadal germ-cell tum. (testis)	0.8	-1.8	-5.4	-0.1	34.1	1.5★	5.0★	2.0
XI Carcinomas and other malignant epithelial neo.	-26.5	0.3	-1.7	-1.5	6.2	0.7	-0.1	0.1
XI(b) Thyroid carcinoma	-77.8	-	-	-	-51.8	-2.7★	0.2	-2.1
XI(d) Malignant melanoma	16.2	1.2	-2.9	-2.5	71.9	1.6	-3.1	-1.0

The EAPC is the Estimated Annual Percent Change over the time interval.
§ SEER Program.
★ The EAPC is significantly different from zero (p<.05).
♦ The EAPC for 1985-97 is significantly different from the EAPC for 1973-84 (p<.05).
◇ The EAPC for 1985-97 is significantly different from the EAPC for 1973-84 (p<.10).
- Statistic could not be calculated.
Neoplasms are abbreviated as neo. Tumors are abbreviated as tum.

Table XXVIII-5

AGE-ADJUSTED SEER CANCER INCIDENCE TRENDS, 1973-97, 1973-84, 1985-97§

By International Classification of Childhood Cancer(ICCC) Selected Group and Subgroup

All Races, Females

	Ages 0-14				Ages 0-19			
ICCC Group and Subgroup	% Change 1973-97	EAPC 73-97	EAPC 73-84	EAPC 85-97	% Change 1973-97	EAPC 73-97	EAPC 73-84	EAPC 85-97
All Groups Combined	13.4	0.6★	1.1	-0.1	14.0	0.7★	1.0	-0.1◊
I Leukemia	3.6	0.5	1.4	-0.2	1.0	0.6	1.5	0.2
I(a) Lymphoid leukemia	39.9	1.2★	3.7★	0.2♦	34.4	1.1★	3.6★	0.3♦
Acute lymphoblastic leukemia (ALL)	39.1	1.2★	3.8★	0.1♦	33.7	1.1★	3.6★	0.3♦
I(b) Acute non-lymphocytic leukemia	-28.9	-0.1	-1.7	-0.1	-20.5	0.5	-0.5	0.4
Acute myeloid leumemia (AML)	-45.8	-1.4	-4.3	1.3	-31.9	-0.5	-2.2	1.8
II Lymphomas and reticuloendothelial neo.	-7.7	-0.6	-4.5★	-0.8◊	20.7	0.2	0.1	-0.6
II(a) Hodgkin's disease	-2.5	-0.9	-3.2	1.5	16.3	0.0	0.4	0.2
II(b,c,e) Non-Hodgkin's lymphomas	6.1	0.5	-5.0	-2.0	58.5	1.5★	0.9	-1.3
III CNS & misc intracranial & intraspinal neo.	21.2	1.3★	0.2	-0.4	25.4	1.3★	0.1	-0.4
III(a) Ependymoma	21.1	1.6	-1.9	-0.9	36.7	1.6	-1.7	-0.7
III(b) Astrocytoma	31.7	1.8★	1.7	-1.0	31.4	1.6★	0.8	-0.8
III(c) Primitive neuroectodermal tum.	60.7	1.7★	-2.2	2.8★◊	60.3	1.8★	-1.2	2.6
III(d) Other gliomas	-16.8	0.3	2.6	-1.4	11.4	0.9	2.7	-0.6
IV Sympathetic nervous system tum.	54.8	0.8	4.3	-0.6◊	50.0	0.6	4.2	-0.5◊
IV(a) Neuroblastoma and ganglioneuroblastoma	47.8	0.7	4.0	-0.6	49.0	0.6	4.1	-0.4
V Retinoblastoma	86.4	1.3	2.0	0.8	86.4	1.3	2.0	0.8
VI Renal tum.	12.9	-0.2	1.5	-0.1	7.0	-0.1	1.5	-0.3
VI(a) Wilms' tum., rhabdoid & clear cell sarcoma	16.0	-0.2	1.5	-0.1	12.9	-0.2	1.6	-0.1
VII Hepatic tum.	34.1	1.7	7.5	-1.0	46.4	1.9	10.0	-2.2♦
VII(a) Hepatoblastoma	347.9	-	-	-1.0	149.6	-	-	-1.0
VIII Malignant bone tum.	-13.9	0.3	3.6	-2.8◊	-6.2	0.1	1.7	-2.4
VIII(a) Osteosarcoma	-10.8	1.1	2.1	1.6	-9.0	0.4	0.7	-0.5
VIII(c) Ewing's sarcoma	10.5	0.0	10.2	-6.5♦	3.0	0.7	6.5	-5.1◊
IX Soft-tissue sarcomas	18.6	0.9	1.7	1.5	17.4	0.5	2.7	0.3
IX(a) Rhabdomyosarcoma and embryonal sarcoma	32.8	0.8	1.4	3.1	30.2	0.8	1.7	2.7
X Germ-cell, trophoblastic & other gonadal neo.	18.5	1.8★	3.5	3.5	8.1	1.7★	-0.4	1.6
X(a) Intracranial and intraspinal germ-cell tum	315.0	-	-	-	315.0	-	-	-
X(c) Gonadal germ-cell tum. (ovary)	-25.6	-0.5	-1.6	-1.0	-5.7	0.9	-2.2	-1.1
XI Carcinomas and other malignant epithelial neo.	21.5	0.4	0.5	1.5	10.2	0.7	0.2	0.3
XI(b) Thyroid carcinoma	11.3	0.6	-0.1	-0.4	21.6	1.3★	1.1	-0.3
XI(d) Malignant melanoma	129.3	-	-	-2.5	63.4	1.9★	2.2	-1.0

The EAPC is the Estimated Annual Percent Change over the time interval.
§ SEER Program.
★ The EAPC is significantly different from zero (p<.05).
♦ The EAPC for 1985-97 is significantly different from the EAPC for 1973-84 (p<.05).
◊ The EAPC for 1985-97 is significantly different from the EAPC for 1973-84 (p<.10).
- Statistic could not be calculated.
Neoplasms are abbreviated as neo. Tumors are abbreviated as tum.

Table XXVIII-6

5-YEAR RELATIVE SURVIVAL RATES, 1985-96[b]

By International Classification of Childhood Cancer(ICCC) Selected Group and Subgroup and Sex and Age

ICCC Group & Subgroup	Ages 0-19 by Sex			Both Sexes by Age				
	Total	Male	Female	0-4	5-9	10-14	15-19	0-14
All Groups Combined	74.7	72.6	77.1	73.6	73.7	73.4	77.0	73.6
I Leukemia	68.9	66.7	71.8	75.7	76.0	58.7	45.2	72.8
I(a) Lymphoid leukemia	77.4	75.3	80.3	83.3	81.4	67.0	51.0	80.3
Acute lymphoblastic leukemia (ALL)	77.6	75.4	80.6	83.4	81.6	67.1	51.5	80.4
I(b) Acute non-lymphocytic leukemia	40.3	35.0	45.4	37.1	48.9↑	39.5↑	39.7	40.5
Acute myeloid leumemia (AML)	41.8	34.5	48.8	38.8	52.4↑	42.4↑	38.7	43.5
II Lymphomas & reticuloendothelial neo.	83.5	82.0	85.6	75.7	82.6	83.8	84.6	82.2
II(a) Hodgkin's disease	92.1	91.5	92.8	-	91.6	93.4	91.6	93.3
II(b,c,e) Non-Hodgkin's lymphomas	72.5	73.0	71.4	72.9	78.8	73.4	68.1	75.2
III CNS and misc intracranial & intraspinal neo.	66.1	67.1	64.9	57.7	65.7	72.8	75.1	64.3
III(a) Ependymoma	58.0	60.5	53.5↑	42.1	76.1↑	82.1↑	-	54.0
III(b) Astrocytoma	75.4	75.5	75.2	79.0	73.4	75.8	73.1	76.0
III(c) Primitive neuroectodermal tumors	56.3	59.3	51.2	39.6	69.5	62.6↑	76.2↑	54.2
III(d) Other gliomas	57.5	60.4	54.0	55.2	42.8	67.7↑	75.0↑	53.5
IV Sympathetic nervous system tumors	65.6	63.7	68.1	68.6	42.6↑	-	-	66.4
IV(a) Neuroblastoma and ganglioneuroblastoma	65.7	63.9	67.8	68.6	42.9↑	-	-	66.6
V Retinoblastoma	93.5	94.7	92.4	93.1	-	-	-	93.4
VI Renal tumors	90.2	88.5	91.8	91.9	87.9	-	-	90.9
VI(a) Wilms' tumor, rhabdoid & clear cell sarcoma	90.9	89.1	92.7	92.0	87.6	-	-	91.0
VII Hepatic tumors	53.5	54.0↑	52.7↑	59.0↑	-	-	-	58.0
VII(a) Hepatoblastoma	61.0↑	57.8↑	64.5↑	60.5↑	-	-	-	61.6↑
VIII Malignant bone tumors	64.6	59.8	71.4	-	70.8	67.1	61.2	67.3
VIII(a) Osteosarcoma	65.2	60.1	72.2	-	64.7↑	69.6	62.4	67.4
VIII(c) Ewing's sarcoma	58.2	50.8	67.6↑	-	75.3↑	58.4↑	52.0↑	62.6
IX Soft-tissue sarcomas	70.9	72.5	68.9	77.9	74.7	69.8	63.8	74.3
IX(a) Rhabdomyosarcoma & embryonal sarcoma	64.8	68.3	58.7	79.1	67.5↑	48.7↑	46.4↑	69.0
X Germ-cell, trophoblastic & other gonadal neo.	88.5	87.3	89.9	84.9	82.1↑	85.5	90.4	84.8
X(a) Intracranial & intraspinal germ-cell tumors	74.2	73.7↑	75.8↑	-	-	84.2↑	83.1↑	68.6↑
X(c) Gonadal germ-cell tumors	94.3	94.8	93.4	100.0	-	94.2	93.4	97.3
XI Carcinomas & other malignant epithelial neo.	89.1	82.3	92.6	74.2↑	90.8	91.5	89.0	89.3
XI(b) Thyroid carcinoma	98.9	96.3	99.4	-	-	98.5	99.0	98.7
XI(d) Malignant melanoma	91.8	89.3	93.5	-	-	89.2	92.6	89.3

[b] Rates are from the SEER Program. They are based on data from population-based registries in Connecticut, New Mexico, Utah, Iowa, Hawaii, Atlanta, Detroit, Seattle-Puget Sound and San Francisco-Oakland. Rates are based on follow-up of patients through 1997.

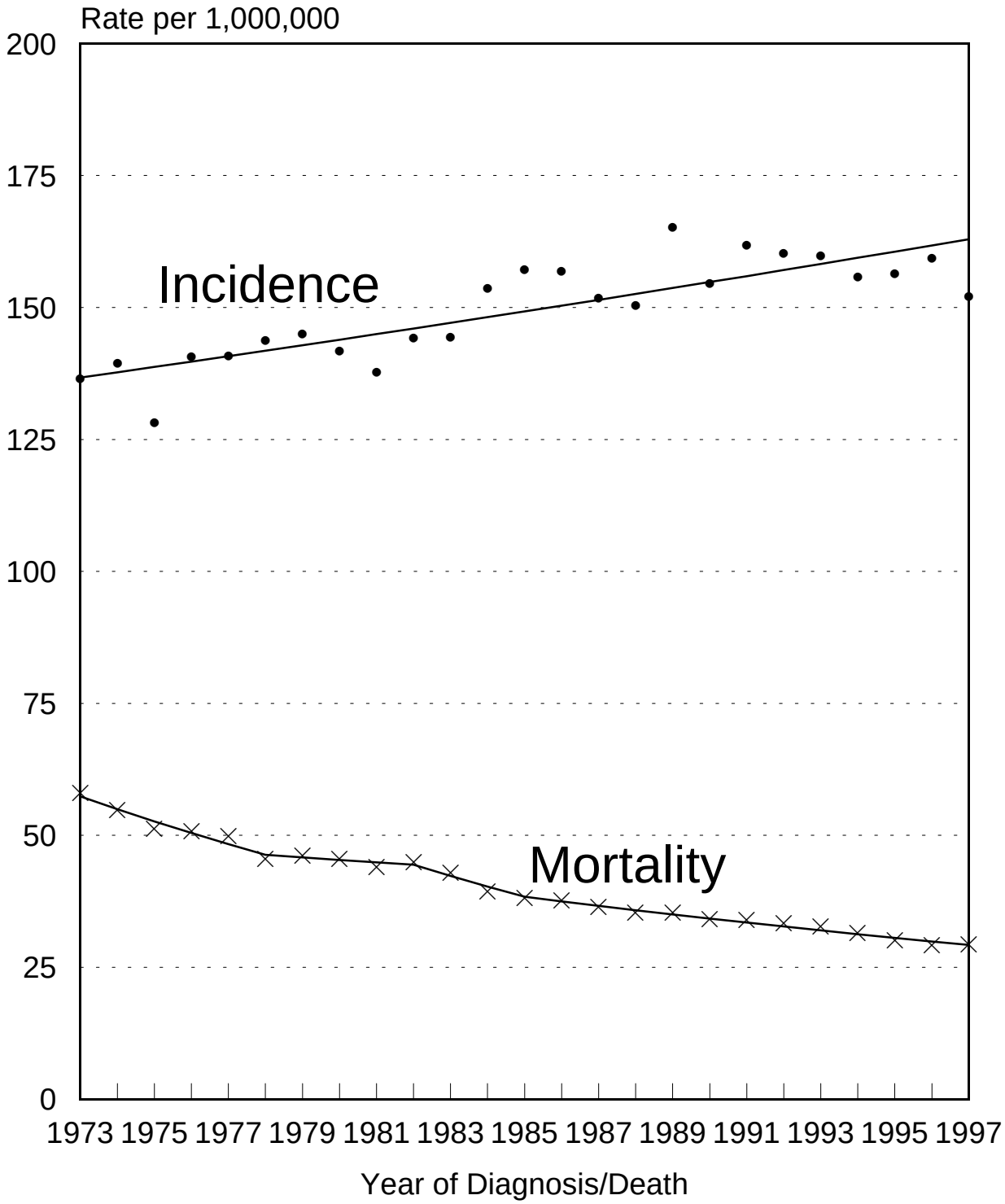
↑ The standard error of the survival rate is between 5 and 10 percentage points.

- Statistic could not be calculated.

Neoplasms are abbreviated as neo.

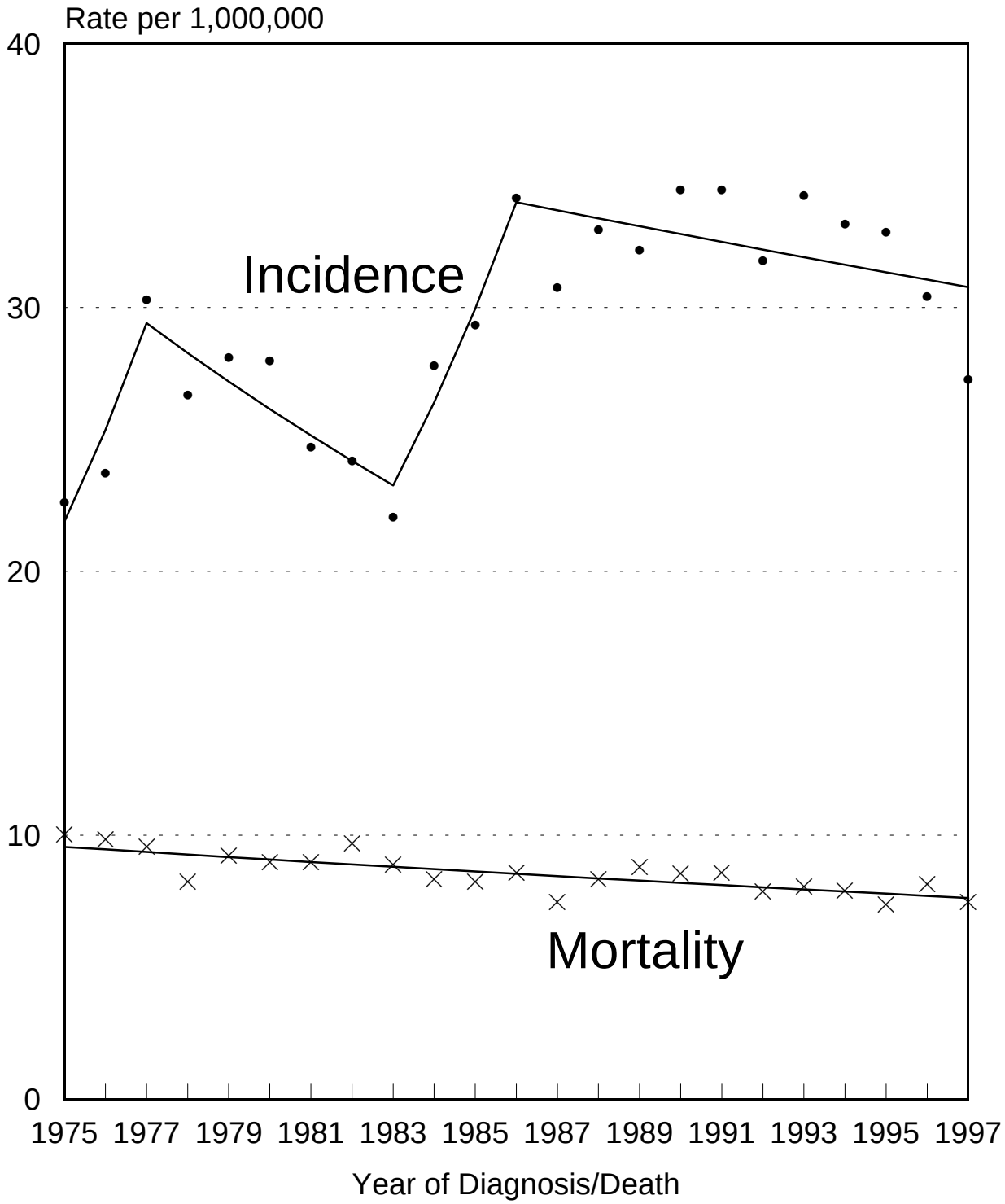
Survival rates are relative rates expressed as percents.

SEER Incidence and U.S. Mortality
All Childhood Cancers, Under 20 Years of Age
Both Sexes, All Races, 1973-1997



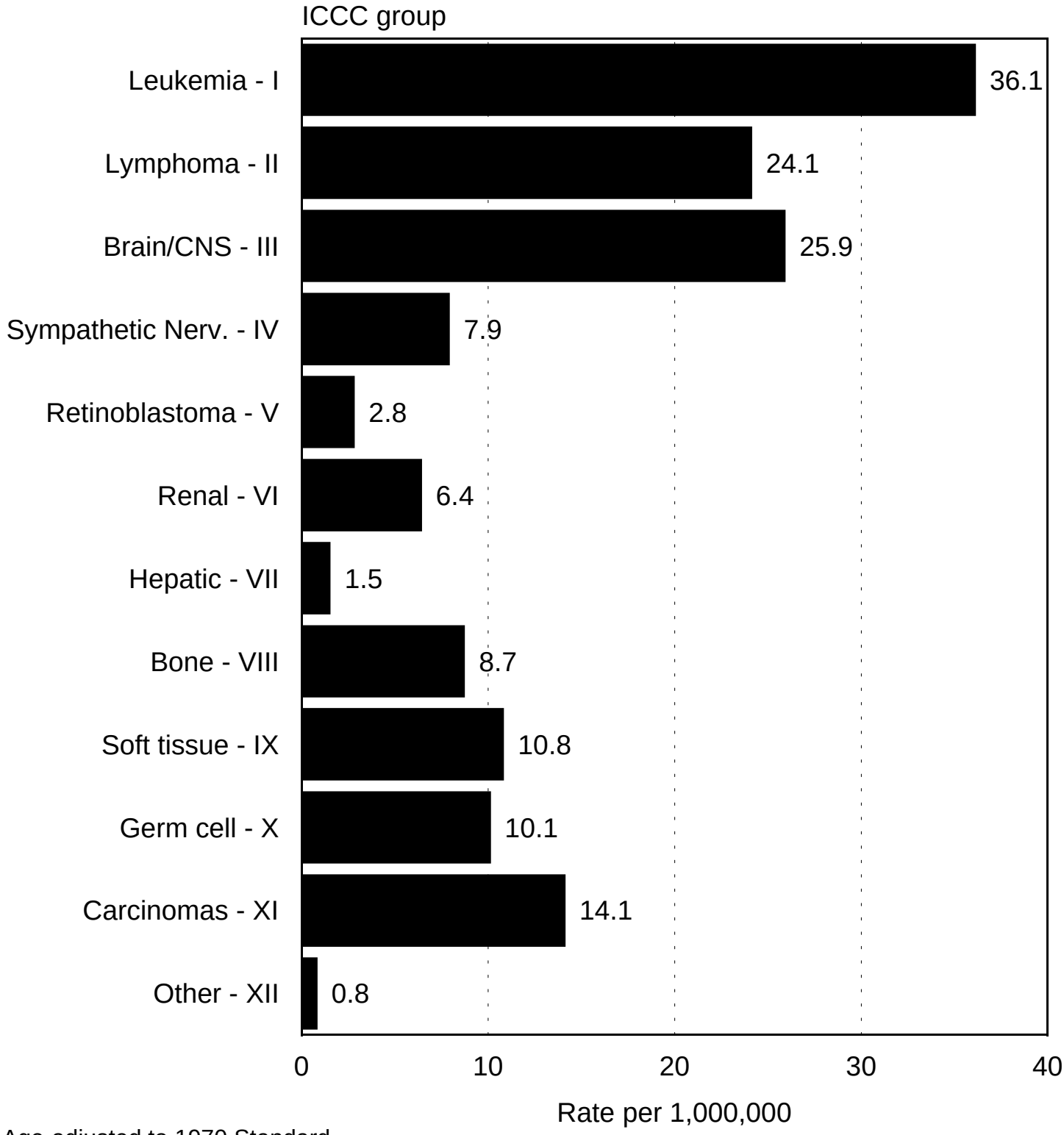
Rates are age-adjusted to the 1970 U.S. standard million population. Regression lines are calculated using the Joinpoint Regression Program.

SEER Incidence and U.S. Mortality
Brain and CNS, Under 15 Years of Age
Both Sexes, All Races, 1975-1997



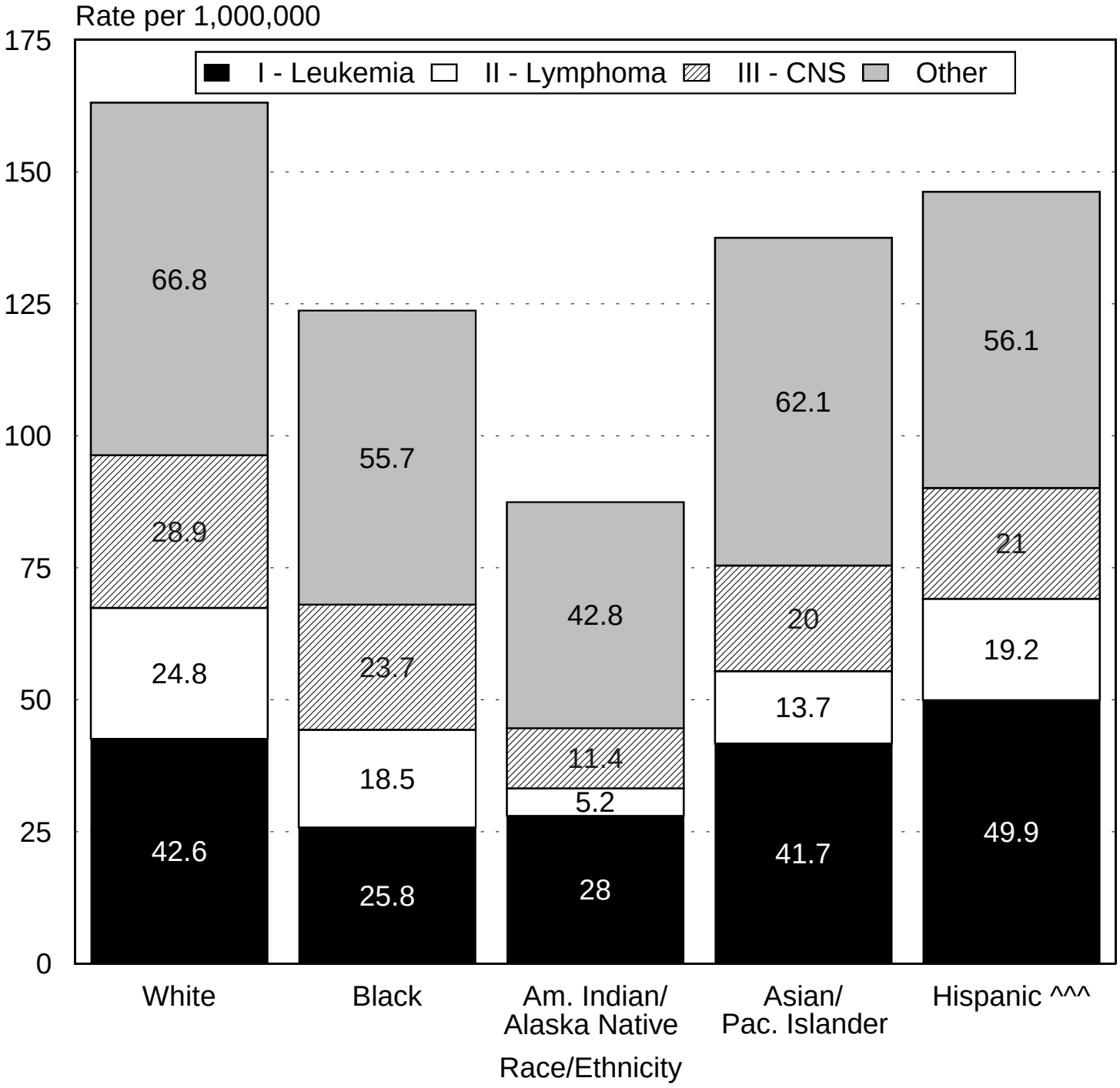
Rates are age-adjusted to the 1970 U.S. standard million population. Regression lines are calculated using the Joinpoint Regression Program.

Childhood Cancer SEER Incidence Rates 1973-1997, by ICCC Group Under 20 Years of Age, Both Sexes, All Races



Age-adjusted to 1970 Standard

Childhood Cancer SEER Incidence Rates 1990-1997 by ICCC Group and Race/Ethnicity Both Sexes, Under 20 Years of Age



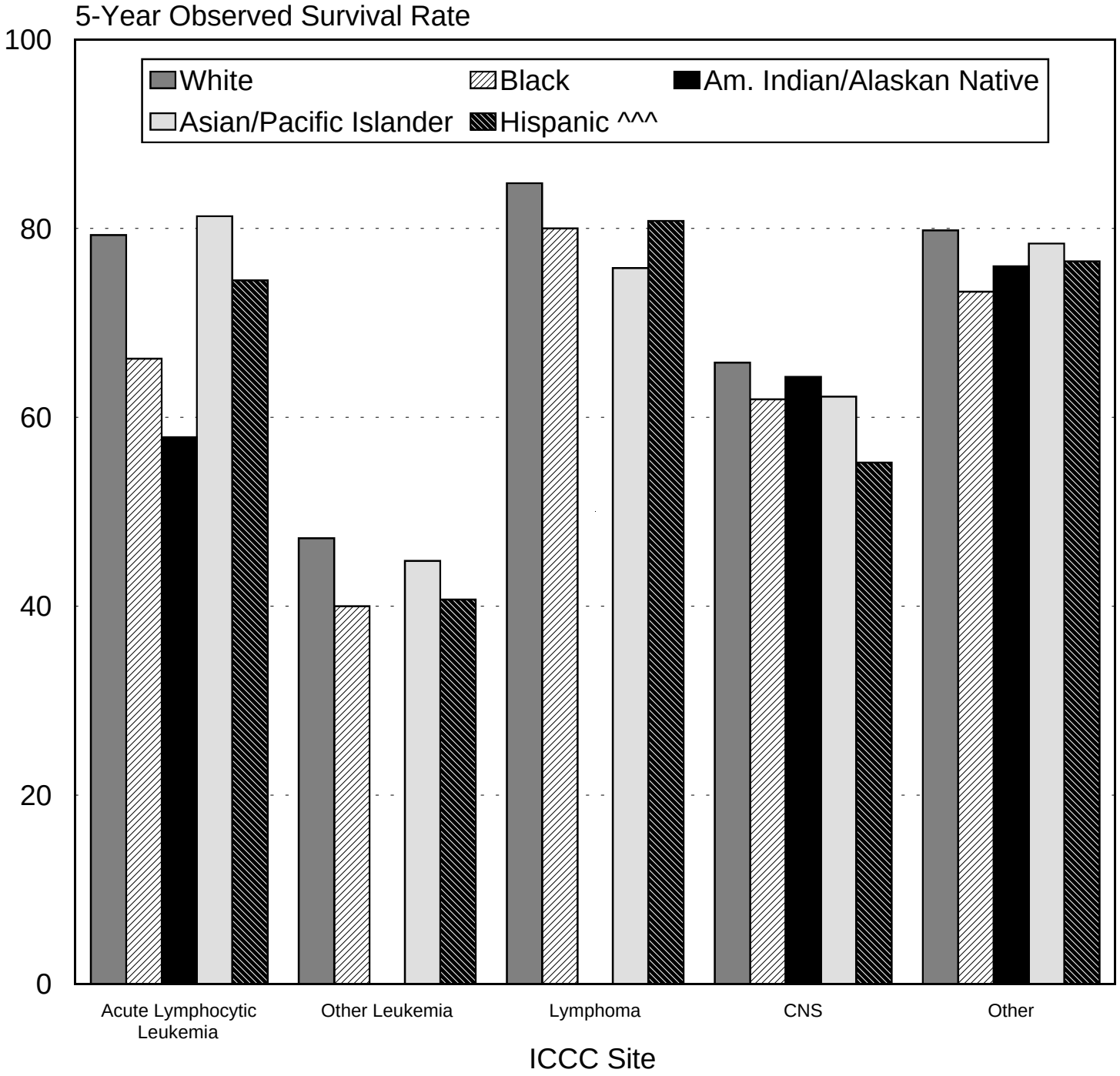
^^^ Hispanic is not mutually exclusive from whites, blacks, Asian/Pacific Islanders, and American Indians/Alaskan Natives.

Data Source: SEER 11 (San Francisco, Conneticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, and Los Angeles) and Alaska.

Age-adjusted to 1970 Standard

Figure XXVIII-5

SEER Childhood Cancer 1988-1996 5-Year Observed Survival Rates by ICCC Group and Race/Ethnicity Both Sexes, Under 20 Years of Age



^^^ Hispanic is not mutually exclusive from whites, blacks, Asian/Pacific Islanders, and American Indians/Alaskan Natives.

Data Source: SEER 11 (San Francisco, Conneticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, Atlanta, San Jose-Monterey, and Los Angeles) and Alaska. Survival rate not shown for fewer than 10 cases for the time period.